

## ON CERTAIN EUPHORBIACEAE FROM THE TROPICAL FAR EAST

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IN the present paper new species and combinations are included together with new records and general critical notes pertaining to representatives of the following genera: *Actephila* Bl., *Phyllanthus* L., *Securinega* A. L. Juss., *Dicoelia* Benth., *Cleistanthus* Hook. f., *Croton* L., *Alchornea* Sw., *Macaranga* Thouars, *Epiprinus* Griff. and *Trigonostemon* Bl.

As a result of the study of the limits of certain controversial groups the following changes are introduced: (1) *Ptychopyxis* Miq. is made to include *Calpigyne* Bl. and *Podadenia* Thw.; (2) *Phyllanthodendron* Hemsl., treated as a section of *Phyllanthus* by many authors, is reestablished as of generic rank; (3) *Coelodepas* Hassk. is used as a *nomen genericum conservandum* and its range is extended to China and Indo-China; (4) *Paracleisthus* Gagnep. and *Nephrostylus* Gagnep. are reduced to *Cleistanthus* and *Coelodepas* respectively; (5) *Symphyllia* Baill. is reduced to *Epiprinus* Griff.; (6) *Phyllanthus* L. sect. *Eriococcus* Muell.-Arg. is raised to subgeneric rank. Various new species are proposed and new combinations made in the genera mentioned. This study is based on material in the herbarium of the Arnold Arboretum of Harvard University.

### **Actephila** Blume

**Actephila longipedicellata** (Merr.) comb. nov.

*Cleistanthus longipedicellatus* Merr. Univ. Calif. Publ. Bot. **10**: 425. 1924.

Apparently a good species, endemic to W. Tonkin, belonging to *Actephila*, having the long-pedicelled and porrected ♀ flowers of numerous species of this genus. Its foliage strongly suggests that of *Erismanthus* Wall., with which it may easily be confused whenever sterile. *Actephila excelsa* Muell. Arg., from India, has much stouter pedicels in fruit. *Actephila subsessilis* Gagnep. has differently shaped leaves and different perianths.

**Actephila Merrilliana** Chun, Sunyatsenia **3**: 26. 1935.

*Actephila inopinata* Croiz. Jour. Arnold Arb. **21**: 490. 1940, Syn. nov.

The original description was based on cultivated specimens originating in Hainan but grown in Canton. When publishing my new species, I relied upon Chun's description and illustration, not realizing that numerous collections of *A. Merrilliana* had been erroneously determined and filed as representative of *Dimorphocalyx Poilanei* Gagnep. These collections, all from Hainan, are as follows: *Lau* 276, 1118, *Chun & Tso* 44524, *Liang* 62134, *How* 70707, 70916, 73826, *Wang* 33012, 34919. *Actephila* and *Dimorphocalyx*, although totally unrelated, are easily confused in a sight-determination, as they differ chiefly in floral characters.



The original description of *A. Merrilliana* Chun stresses the puberulent young shoots and branchlets. The material now available shows that the pubescence is sparse and not very persistent in plants grown under natural conditions. Thus the form which I have called *A. inopinata* may require trinomial recognition in a final revision of the group, although for the present it is placed as a straight synonym of Chun's species.

***Actephila dolichantha* sp. nov.**

Frutex vel arbuscula ad 2 m. altus, cortice pallido, innovationibus ut adest glabratus. Foliis 10–4 cm. longis, 3–1 cm. latis, discoloribus, supra olivaceis, subtus pallide brunneis, oblanceolatis, chartaceis, integerrimis, apice brevius acuminatis, basi longissime cuneatis, venis obscuris, utrinque ca. 8-jugis, adscendentibus; petiolo ca. 1 cm. longo, stipulis petiolaribus triangularibus coriaceis ad 2 mm. longis. Pedunculo fructifero subcapilliformi ad 5 cm. longo, hinc inde bracteolato, pedicello proprio ex articulatione suprema pedunculi 1 cm. longo clavato. Columella crassiuscula 4 mm. longa; coccis delapsis ad 2 cm. longis, endocarpio coriaceo-lignoso, exocarpio tenui, leviusculo, toto secedibili; semine submaturo figura grosse pentagono, 10 mm. lato, 8 mm. longo, facie ventrali impresso incurvo, raphe conspicuo.

CHINA: Yunnan, Kuen-ger, Che-li Hsien, C. W. Wang 79253, October 1936, in mixed forest at 1000 m. alt.

The available material is poor, but the seed is that of an *Actephila*. The Indian *A. excelsa* Muell. Arg. is a very different plant, with much shorter and stouter fruiting pedicels; *A. subsessilis* Gagnep. and *A. longipedicellata* Croiz. have a very different foliage. This is apparently the first record of *Actephila* for continental China.

***Phyllanthus* Linnaeus**

***Phyllanthus Petelotii* sp. nov.**

Arbuscula vel frutex glaberrimus, lignosus. Foliis 1.5–1 cm. longis, 0.5–0.2 cm. latis, lanceolato-ellipticis vel ellipticis, firme chartaceis, margine vix revolutis, venis subobscuris adscendentibus ad 6-jugis; petiolulo brevissimo vix 0.75 mm. longo, stipulis late trigonis, infra interdum liberi, interdum apice setaceis, margine erosulis ad 2 mm. longis latisque. Floribus ♂ ignotis. Floribus ♀: pedicello rigido capillaceo ad 1 cm. longo; perianthii lobis 5 ad basem liberis, integerrimis, lineari-lanceolatis, secus medium costato-venosis, 1.25 mm. longis, 0.30 mm. latis. Ovario glaberrimo, sulcato, levissimo, vix 0.30 mm. magno; stylo erecto ca. 3 mm. longo, stigmatibus lentis ad 1 mm. partitis, subulatis, disco grosse glanduloso.

INDO-CHINA: Tonkin, Cascade d'Argent, Massif du Tam Dao, *Pételot* 5226, May 1931.

The foliage and the long-pedicelled flowers suggest *P. simplex* Retz., but this is a widely distributed annual or perennant weed, having a different floral structure. *Phyllanthus parvijolius* Buch.-Ham., which I am unable at present to extricate from *P. Roeperianus* Muell.-Arg., is probably near *P. Petelotii* as to true affinities, but it has different flowers and smaller leaves. The best diagnostic character of the new species is apparently the structure of the pistillate flower, the erect styles and somewhat effuse habit of the stigmas suggesting *P. flexuosus* Sieb. & Zucc. (*Glochidion flexuosum* Pax & Hoffm.) and species of *Securinega*.



**Phyllanthus sinicus** (Baill.) Muell. Arg. *Linnaea* **32**: 50. 1863.

*Cicca sinica* Baill. *Etud. Gén. Euphorb.* 618. *pl.* 24, *figs.* 28–33. 1858.

*Phyllanthus nobilis* a *genuinus* Muell. Arg. in DC. *Prodr.* **15**(2): 414. 1866, p.p.

As Hooker suspected (*Fl. Brit. Ind.* **5**: 305. 1887), Mueller's understanding of the species of this group is unsatisfactory. *Tsang 29583*, collected at the Taai Wong Mo Shan in Kwangtung, answers the characters of Baillon's *Cicca sinica* and is certainly different from *P. nobilis*, which is a plant from tropical America. *Ford 166*, cited by Forbes & Hemsley (*Jour. Linn. Soc. Bot.* **26**: 420. 1894) as "*Sauropus* ?", probably belongs here and seems to be the same as *Ford 144*, determined "*Sauropus* ?" in the Paris Herbarium. Hooker separates *P. indicus* Muell. Arg. from *P. cyanospermus* Muell. Arg. because the latter has larger flowers and fruits and seeds of a brilliant metallic blue. I fail to find a real difference between *Stocks, Law & C.* (Malabar and Concan, *P. indicus*) and *Thwaites 2155* (Ceylon, *P. cyanospermus*), the ripe seed measuring in both about 5 mm. *Tsang 29583*, on the other hand, has a seed fully 7 mm. long. This difference, coupled with less manifest characters in the perianth, suggests that the plant of China is not conspecific with that of India.

The authors who have dealt with *Cicca* L. either as a section or as a genus are quite unable to agree on its limits. Mueller Argoviensis (DC. *Prodr.* **15**(2): 413–418. 1866) and Pax & Hoffmann (*Engl. & Prantl Nat. Pflanzenfam.* 2nd edit. **19**(c): 62. 1931) treat as *Phyllanthus* sect. *Cicca* species which Gamble (*Fl. Pres. Madras* **2**: 1293. 1925) recognizes under *Prosoros* Dalz. Robinson uses *Cicca* (*Phil. Jour. Sc. Bot.* **4**: 87. 1909) for the sake of one species, *C. acida* (L.) Merr., which has a woody fruit with abortive cells, but rejects Kurz's (*For. Fl. Burma* **2**: 352. 1877) concept of the genus. These doubts and controversies show that the scope of *Cicca* and similar oligotypic or monotypic segregates from *Phyllanthus* is yet to be tested by a study that critically considers all the species of this vast genus.

**Phyllanthus discofractus** sp. nov.

Frutex videtur, apicibus pube crispula minuta sordide vel laete brunnea dissite indutis. Foliis 8–4.5 cm. longis, 3–1.5 cm. latis, habitu optime distichis, ellipticis vel triangulari-ellipticis, interdum subfalcatis, basi late rotundatis, tenuiter chartaceis, colore vario, adultioribus supra griseis, tenellis brunneo-vinosis, hinc inde subtus pube levi parcius adpersis vel glabratis, venis late patentibus utrinque ca. 6-jugis, tenuibus; petiolo vix 0.2–0.3 cm. longo, puberulo, stipulis petiolaribus late triangularibus, acutatis, integris ad 0.15 cm. longis. Floribus in cymulis axillaribus hermaphroditis congestis. Perianthio ♂ colore vinoso ad 0.4 cm. lato, optime 4-lobo, lobis 0.2 cm. longis, margine erosis; staminibus 4 subsessilibus; pedicello gracillimo capilliformi, habitu lento vel flexuoso, ad 0.5 mm. longo. Perianthio ♀: colore ♂, ad 0.7 cm. lato, lobis 6 in serie duplici alternantibus, triangulari-ovatis, ad 0.35 cm. longis, 0.15 cm. latis, margine fimbriato-erosis, medio costatis; ovario primo intuito eximie 6-gono, levi, glabro, ad 0.15 cm. magno, subdepresso, disco ad 0.25 cm. magno, urceolato, labio interno ad basem ovarii videtur aucto, margine subintegro vel repandulo, in partes 3 irregulares (quoad viso) lacerato-partito; stylis 6 applanatis,



habitu cornutis, apice haud involutis, vix 0.1 cm. longis; pedicello subclavato ad 1.1–1.5 cm. longo.

INDO-CHINA: Sai Wong Mo Shan (Sai Vong Mo Leng), a short distance south of the Kwangtung border, *Tsang* 30366, May-Dec., 1940.

The new species belongs to **Phyllanthus** subg. **Eriococcus** (Hassk.) Croiz. & Metc. (*Phyllanthus* sect. *Eriococcus* (Hassk.) Muell.-Arg. *Linnaea* **32**: 3. 1863). This subdivision has been treated as a genus by Baillon under *Eriococcus* Hassk., 1843 (*Etud. Gén. Euphorb.* 648. 1858) and by Gamble (*Fl. Pres. Madras* **2**: 1291–1293. 1925) under the later name, *Reidia* Wight, 1852. A strong case can be made for Baillon's and Gamble's interpretations, because the species of this affinity form a closely knit natural group and do not range beyond Asia and Australasia. Clearly, *Eriococcus* is worthy of at least subgeneric rank and in a general revision of *Phyllanthus* it probably will have to be treated as a genus.

*Phyllanthus discofractus* differs from *P. Roxburghii* Muell.-Arg. in its large ♂ flower with differently shaped lobes; from *P. elegans* Muell.-Arg. in its much less robust habit and the smaller size of all its parts; from *P. gomphocarpus* Hook. f. in its disc and lobes of the perianth; from *P. asteranthos* Croiz., *P. rubriflorus* Beille, and *P. Bodinieri* Rehd. in the foliage. *Phyllanthus ruber* (Lour.) Spreng. superficially resembles the new species but does not even belong in the same subdivision.

### **Securinega** A. L. de Jussieu

**Securinega Spirei** (Gagnep.) comb. nov.

*Flueggea Spirei* Gagnep. in Lecomte, *Fl. Gén. Indo-Chine* **5**: 529, figs. 65, 66. 1927.

I have not seen authentic material and rely on the description and illustrations of Gagnepain for the new combination. As stated in a previous contribution (*Jour. Arnold Arb.* **21**: 491. 1940), I agree with Pax & Hoffmann in reducing *Flueggea* to *Securinega*. The entire alliance to which this genus belongs is in need of critical attention.

### **Phyllanthodendron** Hemsley

The floral differences that separate *Phyllanthodendron* from *Phyllanthus* are at least as great as those which separate the latter genus from *Sauropus* Bl., *Andrachne* L., *Breynia* J. R. & G. Forst., *Securinega* A. L. de Juss., *Glochidion* J. R. & G. Forst., *Reverchonnia* A. Gray and *Agyneia* L. Considering that the original description was carefully drawn up by Hemsley, with the support of excellent illustrations (*Hook. Ic.* **26**: pl. 2563–2564. 1898), we can understand only with difficulty why *Phyllanthodendron* came to be merged with *Phyllanthus* as a "section" even by authors who at first recognized it as a distinct genus, *Uranthera* (Pax & Hoffmann, *Pflanzenr.* **47** (iv. 147. iii): 95. 1911). Mueller-Argovienensis, in describing *Phyllanthus mirabilis*, the basynym of *Phyllanthodendron mirabile*, noticed (*DC. Prodr.* **15**(2): 356. 1866) that it was a "Species forma calycis valde peculiaris et glandulis subpetaloideis insignita, nulli congenerum similis."

The characters that separate *Phyllanthodendron* generically from *Phyllanthus* are: (1) the slender ligules that alternate with the calyx lobes;



(2) the absence of a true disc or glands in the flowers of both sexes; (3) the peculiarly elongate and nearly saccate lobes which Pax & Hoffmann in their description of *Uranthera* aptly characterize as "Sepala cochleato-concava . . . parte superiore in acumen lineare, patens exeuntia."; (4) the usually thick and undivided grooved styles; (5) the intangibles of flower, inflorescence and vegetative characters which have prompted various botanists to identify specimens of *Phyllanthodendron* as representing *Cleistanthus* or even *Glochidion*. A further character which probably has generic importance and requires a modification of the definition of the ovule's and seed's position in the Euphorbiaceae is found strongly marked in *Phyllanthodendron anthopotamicum* (Hand.-Mazz.) Croiz. In this species the chalaza is located on the face of the seed and at the side, not on an adaxial line perpendicular to the hilum. This arrangement is radically different from anything so far observed in the family. A structure of the same kind has probably also been seen by Craib & Hutchinson, who describe (Kew Bull. 279. 1910) the seeds of *P. album* as follows: "Semina irregulariter subtriquetra, dorso convexa, in utroque latere excavatione alternatim supra et infra auriformi." The "excavations" are the hilum and the chalaza, if I am not very much mistaken, for these organs in the seed of *P. anthopotamicum* are embedded in a grooved line somewhat resembling an: "excavatione alternatim supra et infra auriformi."

It is not easy to determine the position of *Phyllanthodendron* in the Engler & Prantl classification as elucidated by Pax & Hoffmann. Characters appear in this genus that bespeak affinities with *Actephila* and *Cleistanthus*, but these two genera are separated in that classification in a clean cut manner, which disregards the fact that *Savia* is very near *Cleistanthus*. There is not the slightest reason, moreover, why *Andrachne phyllanthoides* should be placed in *Savia* as *S. phyllanthoides* Pax & Hoffm. *Phyllanthodendron* probably links the *Glochidion* group with the *Cleistanthus* aggregate.

The material in our herbarium, although fairly representative, is not of the best, so that a key to the species based on it, while it might be plausible on paper, would in practice be of little value. There are three main groups which may be characterized under the following sections:

(1) **Phyllanthodendron** sect. **Euphyllanthodendron**, sect. nov.

Floribus minusculis, lobis perianthii longe acuminatis, in cymulis axillariibus congestis, pedicellis brevibus vel subnullis.

Typus: *Phyllanthodendron ligulatum* (Beille) Croiz.

The clusters of young flowers can easily be confused with fascicles of bud-stipules, as shown, although not very clearly, by Beille (Lecomte, Fl. Gén. Indo-Chine 5: 595. fig. 72, 5. 1927).

(2) **Phyllanthodendron** sect. **Pseudoactephila**, sect. nov.

Floribus pro genere majusculis, lobis modice acuminato-cochleatis, pedicellis vulgo praesertim sub fructu bene elongatis.

Typus: *Phyllanthodendron roseum* Craib & Hutchinson.

The inflorescence, especially when in fruit, suggests *Actephila*, but the foliage is reminiscent of *Cleistanthus* or *Glochidion*.



(3) **Phyllanthodendron** sect. **Calophyllum**, sect. nov.

Foliis minoribus vix ultra 5 cm. longis, indumento proprio facile distinguitur, caeterum inter sectiones praevias medium tenet.

Typus: *Phyllanthodendron anthopotamicum* (Hand.-Mazz.) Croiz.

These three sections may be keyed as follows:

- Leaves less than 6 cm. long .....Sect. *Calophyllum*  
 Leaves more than 6 cm. long  
 Flowers minute, not over 1–1.5 mm. wide, crowded in short-pedicelled capitulate inflorescences .....Sect. *Euphyllanthodendron*  
 Flowers large, 2 or more mm. wide, crowded in long-pedicelled capitulate inflorescences .....Sect. *Pseudoactephila*

The specific epithets under *Phyllanthodendron* have been treated as masculine or neuter. Since *Phyllanthodendron* is a modern compound, formed from two Greek words, I treat it as neuter from the gender of its last component.

(1) Sect. **Euphyllanthodendron**

**Phyllanthodendron mirabile** (Muell.-Arg.) Hemsley, Hook. Ic. **26**: pls. 2563–2564. 1898.

*Phyllanthus mirabilis* Muell.-Arg. Flora **47**: 513. 1864 et in DC. Prodr. **15**(2): 355. 1866; Beille in Lecomte, Fl. Gén. Indo-Chine **5**: 589. 1927; Pax & Hoffm. in Engl. & Prantl Nat. Pflanzenfam. ed. 2. **19**(c): 63. 1931.

I place this species in *Euphyllanthodendron* from the description and the illustration. It may prove to be near *P. ligulatum*.

**Phyllanthodendron ligulatum** (Beille) comb. nov.

*Phyllanthus lingulatus* Beille in Lecomte, Fl. Gén. Indo-Chine **5**: 592. 1927.

The spelling of the epithet *lingulatus* is an evident orthographic error which must be corrected to *ligulatus*. This species is well represented in our herbarium, and in addition I have examined all the material preserved in the herbarium of the Paris Museum. The leaf is fairly symmetric, sometimes slightly auriculate at the base, rather large (up to 15 cm. long and 4 cm. wide), with comparatively few veins (about 7 pairs in a large leaf), apparently subcoriaceous in life. It is a robust woody climber, and its edaphic preference is to the rich soil of decomposed basalt in the primitive forest. The range in Indo-China is prevailingly southern and strictly tropical, in Cochinchina, Cambodia and Laos. Beille extends this species to Tonkin, and publishes a variety, var. *tonkinensis* (op. cit. 593). The holotype of this variety, *Balansa* 3290, of which a fragment is available here, belongs to *Phyllanthodendron Poilanei* (Beille) Croiz., not to *P. ligulatum*. It is almost certain that the *Bon* collections cited by Beille from Tonkin also belong to *P. Poilanei*. It is worthy of note that *Balansa* 3290 is listed by Gage under *P. coriaceum*, which is almost certainly an error, but indicates that similar plants range as far south as Perak.

**Phyllanthodendron Poilanei** (Beille) comb. nov.

*Phyllanthus Poilanei* Beille in Lecomte, Fl. Gén. Indo-Chine **5**: 593. 1927.

*Phyllanthus lingulatus* Beille var. *tonkinensis* Beille l.c.

This species is very near *P. ligulatum*, but is distinct from it on account of its smaller leaves and slightly different flowers. Its range is northern in comparison with that of *P. ligulatum*. An unrecorded collection is *Poilane*



16382: Annam, Vinh Province, Mount Len Că, 350 m. alt. The collector reports that this plant, unlike *P. ligulatum*, prefers calcareous shallow soil, being a vine that reaches a length of about 10 feet.

**Phyllanthodendron coriaceum** Gage, Rec. Bot. Surv. India **9**: 219. 1922; Ridley, Fl. Malay Pen. **3**: 205. 1924.

I have seen no material representing this species, but the description and the citation of *Balansa 3290* (almost certainly an error) indicate that Gage had before him a plant not unlike *P. ligulatum*. The specific epithet was by error printed *dubium*, but in the index to the volume this was replaced by *coriaceum*, and in later distributions of the publication the correction is stamped p. 219. The new binomial was overlooked by the compilers of the current supplement to Index Kewensis.

## (2) Sect. **Pseudoactephila**

**Phyllanthodendron roseum** Craib & Hutchinson, Kew Bull. **1910**: 23. (Febr.) 1910.

*Phyllanthodendron album* Craib & Hutchinson, op. cit. 279. (Oct.) 1910.

*Phyllanthodendron roseum* var. *siamensis* Craib, Kew Bull. **1911**: 460. 1911.

*Phyllanthodendron siamense* Hosseus, Repert. Sp. Nov. **10**: 116. 1912.

*Uranthera siamensis* Pax & Hoffm. Pflanzenr. **47** (iv. 147. iii): 95. 1911.

*Phyllanthus roseus* Beille in Lecomte, Fl. Gén. Indo-Chine **5**: 590. 1927.

*Phyllanthus albus* Beille in Lecomte, l.c.

*Phyllanthus roseus* var. *glabrum* Beille, l.c.

*Phyllanthus roseus* Pax & Hoffm. in Engl. & Prantl. Nat. Pflanzenfam. ed. 2, **19**(c): 63. 1931.

*Phyllanthus albus* Pax & Hoffm. l.c.

Pax & Hoffmann, in making the transfers of *Phyllanthodendron album* and *P. roseum* to *Phyllanthus*, were antedated four years by Beille. Pax, however, was the first author to reduce *Phyllanthodendron* to *Phyllanthus* (Engl. & Prantl, Nat. Pflanzenfam. Ergänzungsh. **1** (Nachtr. 3): 37. 1900), but *Uranthera siamensis*, as noticed by Craib and by Hosseus within one year from its publication, is *Phyllanthodendron*.

A fragment of *Kerr 521*, the type collection of *P. album*, is available in our herbarium. Craib & Hutchinson believe that this species can be distinguished from *P. roseum* by its "foliis lanceolatis, stipulis basi haud productis." I cannot follow them in using these differences as specific characters in this group. The holotypes of *P. album* and *P. roseum* were collected at the same locality (Doi Sotep, near Chiangmai, Siam) and almost at the same altitude (720–800 m.). On the basis of the descriptions I believe that only one species is involved. The variable pubescence of the ovary, which Craib and Hosseus use as a varietal (or as a specific) character, does not impress me as being important enough to deserve consideration, especially for the segregation of distinct species.

So far as the fragment of *Kerr 521* indicates, *P. album* is altogether glabrous on the branchlets and bears but a reduced hispid pubescence on the abaxial side of the petioles. A very poor Chinese specimen in our herbarium might belong here: *Wang 76122*, Yunnan: Fo-Hai, in woods, 1200 m., July 1936.



**Phyllanthodendron dubium** (Ridley) Gage, Rec. Bot. Surv. India **9**: 219. 1922;  
Ridley, Fl. Malay Pen. **3**: 205. 1924.

*Cleistanthus dubius* Ridley, Jour. As. Soc. Straits Branch **59**: 168. 1911.

*Glochidion flavum* Ridley, op. cit. **59**: 173. 1911.

A *Curtis* collection from Langkawi, probably the same one cited by Ridley, is in our herbarium. The material suggests *P. album*, but the leaves are longer and more cuneate. I merely follow Gage in the reduction of *Cleistanthus dubius* and *G. flavum*, having seen no specimens.

**Phyllanthodendron carinatum** (Beille) comb. nov.

*Phyllanthus carinatus* Beille in Lecomte, Fl. Gén. Indo-Chine **5**: 591. 1927.

A poor fragment of the holotype, *Eberhardt 2572*, is in our herbarium. I believe that the species falls into Sect. *Pseudoactephila*, but this needs to be verified. A leaf about 8 cm. long has but 2–3 pairs of ascending veins that manifestly anastomose at about 8 mm. from the margin. The growth is altogether glabrous, as shown in the specimen, with the exception of few hispid hairs on the abaxial side of the very young leaves.

**Phyllanthodendron yunnanense** sp. nov.

Arbuscula, 7 m. alta. Ramulis apice costulatis, pube pallide brunnea vel albicante brevi indutis, aetate glabratis, cortice cinereo plus minusve rimoso. Foliis 8–6 cm. longis, 3.5–2 cm. latis, brunneis, firme chartaceis, plerumque inaequilateris, more *Glochidionis* specierum subfalcatis, caeterum ellipticis, venis patule adscendentibus utrinque 8–10-jugis, apice brevius acuminatis, margine hinc inde sub lente acri denticulato-erosis, vix revolutis, nervo medio conspicuo; petiolo brevissimo 2–5 mm. longo, pubescente, stipulis petiolaribus apice acuminato-setaceis, basi rotundatis, pubescentibus, diutius persistentibus vel marcescentibus. Floribus utriusque sexus in glomerulis axillaribus congestis, pedicellis basi hirtellis subcapilliformibus ad 4 cm. longis. Flore ♂: perianthio 5 mm. lato, disco nullo, lobis calycinis 5–(6), ca. 2 mm. longis, centro valde costatis caeterum more generis subhyalinis, apice acutatis, plus minusve calloso-mucronatis, glandulis seu ligulis calycinis tenuissimis, subfiliformibus, cum lobis alternatibus iisque brevioribus; filamentis staminum in columnam coalitis ad 2 mm. longa, antheris didymis ca. 1 mm. longis, connectivo apice eximie producto subulato, pistillodio nullo. Flore ♀: perianthio ♂ sed majore, lobis ad 6 mm. longis, 1.5 mm. latis, ligulis calycinis 3–5 mm. longis, linearibus; ovario globuloso 2.5 mm. magno, parcius setuloso, disco omnino nullo, stylis patentibus, carnosulis, apice integris, sulcatis.

CHINA: Y u n n a n: Meng-Ka, C. W. Wang 72901, alt. 1670 m., April 1936.

Apparently of the affinity of *P. album*, but altogether different in its foliage.

**Phyllanthodendron lativenium** sp. nov.

Arbuscula videtur, ramulis apice subherbaceis in sicco nigris, glabris vel glabratis. Foliis 11–6 cm. longis, 2.5–4 cm. latis, tenuiter coriaceis, ellipticis, longe acutatis, interdum subfalcatis, glaberrimis, venis utrinque 8-jugis latius patentibus; petiolo brevissimo 2 mm. longo, stipulis triangulari-acuminatis, glaberrimis, integris, marcescentibus. Flore ♂: pedicello capilliformi, plus minusve flexuoso ad 1 cm. longo, perianthii lobis 5, acutato-callosis, staminibus ut videtur 3 in columnam coalitis. Flore ♀:



pedicello apice leviter subincrassato, rigido, capilliformi ad 2–2.5 cm. longo, perianthii lobis sub fructu reflexis ad 5 mm. longis, apice acutatis. Fructu capsulari *Actephilae* ssp. mentiente, coccis delapsis convolutis ad 2 cm. longis, endocarpio corneo, exocarpio levi brunneo tenuissimo sub lente obscure punctulato, venulis obsito subreticulatis; columella ad 1 cm. longa.

CHINA: Kweichow, woods of "Kouan yn tóng" *Esquirol* 6076, 1200 m. alt.

The material was received in November 1922 at the Paris Museum, where it remained undetermined. The type-specimen is far from satisfactory, but a new species is indicated, somewhat resembling *P. album*, although quite distinct in the characters of its foliage and its fruits.

A specimen from Indochina, Tonkin, Thay Nguyen, Cho-ch, *Eberhardt* 3973, described as a shrub 12–18 feet tall, may prove to belong here, despite its much narrower leaves. Its venation would seem to preclude its reference to *P. carinatum* (Beille) Croiz.

### (3) Sect. **Calophyllum**

**Phyllanthodendron Dunnianum** Léveillé, *Repert. Sp. Nov.* **9**: 324. 1911, *Fl. Kouy-Tchéou* 166. 1914.

*Phyllanthodendron Cavaleriei* Léveillé, *op. cit.* 454, *Fl. Kouy-Tchéou* 166. 1914.

*Phyllanthodendron Dunnianum* Léveillé var. *hypoglaucum* Léveillé, *Fl. Kouy-Tchéou* 166. 1914.

*Phyllanthus Dunnianus* Hand.-Mazz. ex Rehd. *Jour. Arnold Arb.* **14**: 230. 1933.

A strong species, with the calyx-lobes in fruit larger than in any other representative of the genus I have so far seen. The bark of the branchlets tends to exfoliate. The leaves have a conspicuous whitish under surface and bear a type of indumentum which is altogether unusual for the Euphorbiaceae. Under a moderate magnification it is seen to consist of minute irregularly dissected lumps of an apparently resinous exudate. This exudate is doubtfully to be compared to a wax, and is probably analogous to that which appears on the undersurface of the leaves of certain Lauraceae.

**Phyllanthodendron anthopotamicum** (Hand.-Mazz.) comb. nov.

*Phyllanthus anthopotamicus* Hand.-Mazz. *Symb. Sin.* **7**: 223. 1931.

The leaves are smaller and more delicate than are those of *P. Dunnianum* but they bear the same peculiar indumentum, with added whitish, simple or sparingly fascicled hairs along the veins and veinlets. *Handel-Mazzetti* 91 = 10377, collected in S. W. Kweichow, seems at first to differ greatly from *Pételot* 5229, from Indochina, Tonkin, Mount Song-to-Van, Chapa, July 1931. This is described as thriving in humus on calcareous rocks exposed to the full sun at about 1600 m. altitude. The foliage of the *Pételot* material is brown, not whitish beneath, the leaves are slightly broader on the whole than are those of the *Handel-Mazzetti* collection. I am unable to find other differences, especially in the floral parts, however, and treat these two plants for the present at least as conspecific. The Euphorbiaceae of the region of Chapa are usually the same as those of Yunnan, but very seldom, if ever, the same as those of Kweichow.



## (4) DOUBTFUL SPECIES

*Phyllanthus rubicundus* Beille was placed by Beille in the section *Phyllanthodendron* of *Phyllanthus* (Lecomte, Fl. Gén. Indo-Chine **5**: 574. 1927). The holotype is a very poor specimen and my fragment of it is hardly satisfactory for the purposes of a critical work. It seems advisable to await the collection of better material before effecting the combination under *Phyllanthodendron*.

**Dicoelia** Benth

**Dicoelia Beccariana** Benth. in Hook. Ic. **23**: 70. *pl.* 1289. 1879.

Little, if anything, has been heard of this species since its publication. A Sarawak specimen in our herbarium, originally distributed as *Trigonostemon*, *Native collector 1843*, being part of the material gathered through the Sarawak Museum for the Bureau of Science, Manila, probably belongs here. It is strikingly like a species of *Trigonostemon* in all its vegetative characters, but the capsules have two seeds in each cell. A second specimen in our herbarium, *Rahmat Si Boeea 7794*: Sumatra, East Coast, Vicinity of Hoeta Bagasan, Asahan, 1934–1935, has ♂ flowers only. The details of these specimens do not agree with those figured by Benth for *D. Beccariana* and by J. J. Smith for *D. affinis* (Bull. Jard. Bot. Buitenzorg 3 sér. **1**: *pl.* 41, 42. 1920), but the foliage is reminiscent of *Dicoelia*. It is likely that this genus occurs also in the Philippines.

**Cleistanthus** Hooker f. (*Paracleisthus* Gagnepain)

Gagnepain segregated five species from *Cleistanthus* (Bull. Soc. Bot. France **70**: 496–500. 1923, et in Lecomte Fl. Gén. Indo-Chine **5**: 496–501. 1927) and proposed for them the new genus *Paracleisthus*. The generic characters of *Paracleisthus* are to be found, Gagnepain avers, in the position and attachment of the ovule: the ovule is pendulous and the obturator (probably the *operculum* of Gagnepain) and funiculus are single in *Cleistanthus*; on the contrary, the ovule is ascending, the funicles are distinct, and the obturator is not present in *Paracleisthus*.

The validity of *Paracleisthus* has been challenged so far but once, by Merrill & Chun (Sunyatsenia **1**: 64. 1930), who, affirming the nomenclatural priority of *Cleistanthus Saichikii* Merr., July 24, 1923, over that of *Paracleisthus subgracilis* Gagnep., August 2, 1923, state incidentally, "We reduce the genus *Paracleisthus* to *Cleistanthus*." Pax & Hoffmann (Engl. & Prantl. Nat. Pflanzenf. ed. 2, **19**(c): 232. 1931) err in crediting to Gagnepain the publication of a genus *Paracroton*, of which they say, "Bau und Orientierung der Samenanlage sprechen gegen eine Euphorbiacea." Since Pax & Hoffmann refer this genus to the page of the Flore Générale where *Paracleisthus* is described, if not actually published, it is plain that their *Paracroton* is an error for *Paracleisthus*. Their comment that the structure and the position of the ovule are incompatible with an euphorbiaceous plant is unexplainable, because Gagnepain has placed under *Paracleisthus* two well known species of *Cleistanthus*, *C. siamensis* Craib and *C. tonkinensis* Jabl.



I fail to see in Gagnepain's description of the ovulation and placentation of *Paracleisthus* anything which justifies accepting this group as a genus. In his key Gagnepain (in Lecomte, Fl. Gén. Indo-Chine **5**: 235. 1925) states that the ovules of *Paracleisthus* are ascending and have no funicle. This is not borne out by his own illustrations. A manifest funicle is shown in the various species of *Paracleisthus* which he figures, and the position of the point of attachment of the funicle is also shown to vary, being slightly below the middle of the seed in *P. subgracilis* (op. cit. 502. fig. 64, 7) and absolutely basal in *P. tonkinensis* (op. cit. 502. fig. 64, 10). All the ovules of these species, moreover, are *anatropous* even when they are *ascending*, because in them the hilum is central between the micropyle and the chalaza. Gagnepain's confused interpretation of the carpel structures of *Cleistanthus* and *Paracleisthus* appears to be based upon the misapprehension that an ascending ovule is necessarily orthotropous, which is far from being the case. In referring to an "operculum," Gagnepain probably confuses the caruncle with the obturator; these, however, are different organs (see Schweiger, Flora **94**: 339-379. 1905).

**Cleistanthus Eberhardtii** (Gagnep.) comb. nov.

*Paracleisthus Eberhardtii* Gagnep. Bull. Soc. Bot. France **70**: 499. 1923, et in Lecomte, Fl. Gén. Indo-Chine **5**: 501. 1926.

A fragment of the holotype is in our herbarium. The species is from Annam and is unlike the others described under *Cleistanthus* and *Paracleisthus* by Gagnepain. It may prove to be very near *C. anomalus* Merr. & Metc.

**Cleistanthus Pierrei** (Gagnep.) comb. nov.

*Paracleisthus Pierrei* Gagnep. Bull. Soc. Bot. France **70**: 500. 1923, et in Lecomte, Fl. Gén. Indo-Chine **5**: 498. 1926.

A number of forms and species are in this vicinity which require critical attention. *Cleistanthus Helferii* Hook. f., as represented by *Helfer* 4886, cited by Hooker (Fl. Brit. Ind. **5**: 280. 1887), appears to be distinct from *C. Pierrei* and *C. siamensis* Craib. *Pierre* 1853, collected at Bao-Chiang, Bien-Hoa Prov., Cochinchina, probably represents another state of the same plant identified by Gagnepain as *P. Pierrei*.

**Cleistanthus tonkinensis** Jabl. Pflanzenr. **65** (iv. 147. viii): 16. 1915.

*Paracleisthus tonkinensis* Gagnep. Bull. Soc. Bot. France **70**: 497. 1923, et in Lecomte Fl. Gén. Indo-Chine **5**: 499. 1926.

*Cleistanthus sageretioides* Merrill *mss. in sched.*

This proves to be a common species in Tonkin, to judge from the numerous collections received here in the last five years. It is very easily identified on account of the axillary tufts of brownish hair at the axils of the main veins. The axes bearing flowers also tend to specialize into strictly floriferous brachyblasts, thus approaching *Amanoa*, which Baillon correctly placed near *Bridelia* (Etud. Gén. Euphorb. 580. 1858), consequently near *Cleistanthus*.

A new record for the flora of China is: *Tsang* 22100, Kwangsi, Shap Man Taai Shan, "fairly common in dry clay," April, 1933, originally determined as "*Rhamnus* sp."



Merrill's manuscript binomial has been rather extensively used in herbaria and should be cited.

**Cleistanthus indochinensis** Merrill mss. in sched., sp. nov.

Arbuscula. Foliis 14–8 cm. longis, 5–3.5 cm. latis, ellipticis, cuspidato-caudatis, basi rotundatis vel cuneato-rotundatis, tenuiter chartaceis, glaberrimis, margine integerrimo calloso hyalino, saepius repandulo, venis omnibus delicatis, primariis utrinque 7–10-jugis; petiolo gracili brunneo-ruguloso, 3–5 mm. longo, stipulis petiolaribus late triangularibus apice setaceis 1–2 mm. longis, margine abaxiali saepius hyalino, integro. Inflorescentiis cymosis axillaribus, in ramulis ipsis vel secus brachyblasta gracilia hispidula congestis. Flore ♂: perianthio glabro, late obconico 4.5 mm. longo ad 6 mm. lato, ultra medium in lobos 5, 2 mm. longis, 1.75 mm. latis, late triangularibus partito; disco callosulo, margine eroso, ligulis ornato late flabellatis ca. 1 mm. longis; columna staminalis ca. 1.5 mm. longa, pistillodio pro ratione columnae sat valido; staminibus 5, filamentorum parte libera vix 0.5 mm. longa, antheris ca. 0.75 mm. longis. Flore ♀ sub fructu immaturo tanto viso: perianthio ut in ♂, lobis 5, 3–5-nerviis, triangulari-acutatis 3 mm. longis, 1 mm. latis, disco subalutaceo integro 1.5 mm. alto, ligulis ad 2 mm. longis, 1 mm. latis, spathulato-rotundatis, bene pedunculatis, sub lente acri glandulosis; capsula 3–4-loculari, submatura ca. 1 cm. lata, 7 mm. longa, stylis patentibus apice bifidis, pericarpio levi, pallide brunneo.

INDO-CHINA: Tonkin, Hoa-Binh Province between Hoa Binh and Vu Ban, *Pételot* 6397, May 1938.

A second collection from the same locality, with the habitat described as a very damp gully (“un ravin très humide”), is *Pételot* 6528, May 1938. The nearly mature capsules of this specimen have been used in drawing up the specific description. *Cleistanthus indochinensis* appears to be closely allied to *C. Eberhardtii*, but it differs in its stipule, inflorescence and leaf-characters.

**Cleistanthus Petelotii** Merrill mss. in sched., sp. nov.

Arbuscula 7–8 metralis, glabra. Foliis 15–8 cm. longis, 7–3 cm. latis, coriaceis, glabris, apice breviter acuminatis, basi longius gradatimque cuneatis vel rotundato-cuneatis, margine plus minusve revolutis, venis 6–7-jugis sub marginem curvantibus vel curvato-anastomosantibus, trabeculis conspicuius; petiolo rugoso, glabro vix 5–6 mm. longo. Flore ♂: perianthio glabro, 5 mm. longo, 4.5 mm. lato, obconico, ultra medium in lobos 5 triangulari-acuminatos 3 mm. longos, 1 mm. latos partito; disco 1 mm. alto, ligulis obovatis erosulis ad 1 mm. longis, columna staminali ca. 2 mm. longa, staminibus 5, filamentum parte libera ca. 1 mm. longa, antheris triangularibus apice in connectivum trigonum breve productis, antheris 0.6 mm. longis. Flore ♀: perianthio paene ♂, 5 mm. magno; disco integro 2 mm. alto, ligulis minimis, ovario globuloso, levi, basi setis lutescentibus cincto, ca. 2 mm. magno, stylis 3 apice subpartitis glandulosulis.

INDO-CHINA: Tonkin, Hoa Binh Province, Muong Thon, road from Hanoi to Hoa Binh, *Pételot* 6396, May, 1938.

A second collection is *Pételot* 6385: Tonkin, Langson Province, between Dong Mô and Van Linh, April, 1938. This new species is outstanding, being characterized by a robust habit and thickish leaves with a sharply etched venation. Its foliage and facies are reminiscent of *Gelonium* Roxb.



**Cleistanthus concinnus** sp. nov.

Fruticulus videtur ramulosus, innovationibus longa parte pube hispidula rubro-brunnea confertius indutis. Foliis coriaceis, 4–2 cm. longis, 1.5–0.5 cm. latis, supra griseis, subtus pallide brunneis vel cinerascensibus, pro more generis parvis, pube rara ad costam venas limbumque adspersis, nervis utrinque delicatis revera haud obscuris, utrinque ca. 9-jugis; petiolo hispidulo, 1–3 mm. longo, stipulis petiolaribus 1 mm. longis, unguicularibus, vix setaceis, pubescentibus. Floribus ♂ haud visis. Perianthio ♀ sub fructu 5-lobo, ca. 4 mm. lato, circa ad medium partito, glabro, brevissime pedicellato vel subsessili, pedicello 1.5 mm. longo, columella 3–3.5 mm. longa, coccis delapsis 8 mm. longis, involutis, firmissime sublignosis, pericarpio levissimo sparse glanduloso-punctato; semine *Vitis* ssp. figura atque mole simili, forma cordato, ad chalazam valde impresso sublobulato, hilo sub-centrali.

INDO-CHINA: Annam, Phanrang Province, a shrub in dry rocky soil, *Poilane* 12440, Oct. 1925.

Other collections from the same region are: *Poilane* 12457, from Phanrang Province, Cana, open rocks at 1200 m. alt., Oct. 1925, and *Poilane* 2873, vicinity of Nhatrang, Island of Tré, March 1922. The last was determined by Gagnepain as representing *Paracleisthus siamensis*.

*Cleistanthus concinnus*, *C. siamensis*, *C. Pierrei* and *C. anomalus* are closely related species, apparently characteristic of the flora of the coastal Indo-chinese belt, from Pulo Condor to Hainan and Hongkong. The relationships of the species in this range among themselves and with those of the mainland is still largely conjectural.

**Croton** Linnaeus**Croton murex** sp. nov.

Frutex vel arbuscula ad 1 m. altus. Ramulorum apicibus grosse dissiteque stellato-tomentosis vel argillaceo-stellatis, subserius glabris. Foliis 10–6 cm. longis, 3–1.5 cm. latis, distanter verticillatis, rarius alternatis vel oppositis, utrinque pilis stellatis albis paucioribus conspersis subglabrisve, elliptico-lanceolatis, acuminatis vel caudato-acuminatis, basi cuneato-rotundatis vel cuneatis, glandulis 2 stipitatis posticis insignitis, margine obiter distanteque serrulatis vel repandulo-serratis, glandulis marginalibus nullis; petiolo 0.3–10 mm. longo. Inflorescentiis ad 4 cm. longis, rachide sub-filiformi, bracteis minutis. Floribus ♂ immaturis, alabastris pedicellatis, pedicello 2–5 mm. longo, substellato-tomentosis vel glabris. Floribus ♀ parcius stellato-tomentosis: pedicello in anthesi 2 mm. longo, sub fructu 5–6 mm. longo; calyce fere ad basim partito, 4–5 mm. lato, lobis triangulari-lanceolatis, integris, intus glabris, ad 2 mm. longis, petalis subnullis glandulosis; ovario ca. 2–3 mm. magno sub lente nigricante, muricato, muricibus (licet processibus carnosulis) praesertim in apice grosse stellato-hispidis, stylis fere ad basim partitis, 4 mm. longis, subulatis, in dorso parcius stellato-tomentosis; capsula (fracta) saltem in dorso coccorum muricata, videtur ad 6 mm. magna.

INDO-CHINA: Annam, 12 km. north of Dankia-Langbiang, a shrub in undergrowth, 1 m. tall, alt. 1200–1500 m., *Poilane* 18657.

This new species suggests the gross morphology of *C. calococcus* Kurz



and *C. Bonianus* Gagnep., but is easily separated from both by its muricate capsules. It differs from *C. alpinus* Gagnep., which has a similar capsule, in the foliage and in numerous intangibles.

***Croton kwangsiensis* sp. nov.**

Frutex ad 4–5 ped. altus. Apicibus tomentosus, indumento rubiginoso vel ochraceo sat grosso. Foliis 16–8 cm. longis, 7–3.5 cm. latis, elliptico-lanceolatis, apice longiuscule acuminatis vel cuspidatis, basi plus minusve rotundatis, firme chartaceis, olivaceis vel brunneo-olivaceis, supra glabrescentibus vel glabris, subtus tomentosus, tomento pallide rubiginoso vel ochraceo, conferto, margine integro glandulis lutescentibus sessilibus obsito, venis saepius supra impressis ca. 6–8 jugis, primo jugo valde adscendente, caeteris plus minusve patentibus; petiolo 1–2 cm. longo, apice glandulis stipitatis patelliformibus 2 insignito. Inflorescentiis subspicatis 2-sexualibus. Floribus ♂ haud visi. Floribus ♀: perianthio ca. 8 mm. lato, subsessili vel brevissime pedicellato (pedicello nec ultra 2 mm. longo), lobis ligulatis, abrupte acutatis 4 mm. longis, 1 mm. latis, pubescentibus, integerrimis; petalis: ligulis setaceis intra lobos; disco e glandulis 5, supra dilatatis, nigricantibus; ovario globoso ca. 3 mm. magno, hispidulo, albicante vel lutescente, stylis 3, liberis, infra tomentosus, supra glabratis nigricantibus, totis ca. 6 mm. longis; columella gracili ca. 5 mm. longa.

CHINA: Kwangsi, Ling-chuan District, fairly common in clay, *Tsang W. T.* 27879, July 1937.

Fairly near *C. latsoniensis* Gagnep., but a less robust plant with more delicate flowers.

***Croton potabilis* sp. nov.**

Arbor ad 10–12 m. alta. Apicibus lepidotis, cupreis, citius glabratis. Foliis 13–5 cm. longis, 5–1.5 cm. latis, firme chartaceis, supra brunneis, subtus argenteo-lepidotis, hic inde maculis cupreis minutissime adspersis, elliptico-lanceolatis utrinque acuminatis, apice acutatis vel cuspidatis, basi arctius cuneatis, venis primariis ca. 8-jugis, margine integro; petiolo 1–3 cm. longo, glandulis minimis sessilibus apice insignito. Inflorescentiis subspicatis, simplicibus 2-sexualibus. Floribus ♂ haud visis. Floribus ♀: perianthio 4 mm. longo, 4 mm. lato, pedicello graciliore per anthesim ca. 5 mm. longo, sub fructu ad 8–10 mm. longo; lobis 5 ca. 3 mm. longis, 1 mm. latis, elliptico-lanceolatis ovarium occultantibus; petalis nullis; ovario globoso ca. 2.5–3 mm. magno, cupreato-lepidoto, stylis 3, fere ad basim liberis, parte infera integra lepidota, 2 mm. longa, supera partita, carnea, 2.5 mm. longa; fructu (ex *Clemens 3842*) capsulari delicato, rubiginoso-lepidoto, globuloso, ca. 5 mm. magno, columella gracillima ad 4.5–5 mm. longa; semine brunneo, levi, 3.5 mm. longo, 3 mm. lato, caruncula more proprio flabellata cum hilo contigua.

INDO-CHINA: Annam, Moi Lanh, Quang-Tri Prov., drunk by the natives in infusion as tea, native name: "Côn che," *Poilane 10426* TYPE, May 1924. Other collections: Annam, Mt. Bana, small tree in forest, *J. & M. S. Clemens 3842*, 1927; Annam, Ba-na, near Tourane, *Poilane 7342*, 1923.

Gagnepain has described *C. argyratus* Bl. var. *microcarpa* Gagnep. (in Lecomte, *Fl. Gén. Indo-Chine* 5: 277. 1925) and given of this presumed variety a description that would fit *C. potabilis*. I do not know what Gagnepain intends by this variety. The *Poilane* material cited here is de-



terminated by Gagnepain himself as *C. argyratus* Bl., a species from which it differs almost at sight identification. *Croton potabilis* has a much smaller capsule than *C. argyratus* and is easily distinguished from *C. kongensis* Gagnep., *C. budopensis* Gagnep. and *C. scopuligenus* Croiz. by all its ♀ floral characters.

***Croton ignifex* sp. nov.**

Arbuscula ad 2.5 m. alta, graciliore. Apicibus diutius argillaceo-tomentosis, indumento pallide ochraceo confertiore. Foliis 5–2.5 cm. longis, 2–1 cm. latis, coriaceis, ellipticis, apice abrupte acuminatis vel rotundatis, basi cuneatis, in sicco pallide olivaceis, margine calloso vix dentato-crenulato, venis ca. 6-jugis, adscendentibus, trabeculis ut venis primariis conspicuis; petiolo 3–8 mm. longo, glandulis minimis. Inflorescentiis subspicatis. Floribus ♂ haud visis. Floribus ♀: perianthio ca. 2 mm. magno, pedicello vix 2 mm. longo; petalis brunneis, ligulatis, vix 1.5 mm. longis vel brevioribus, lobis triangulari-acuminatis ad 1.5–2 mm. longis; ovario globuloso albicante, lepidoto-tomentoso, ad tertium superum e perianthio libero, ca. 2 mm. magno; stylis 3 liberis fere ad basem imam partitis, nigricantibus, ca. 2 mm. longis.

INDO-CHINA: Annam, Island of Tré, a small tree, abundant in the southern part of the island and much used for making torches, *Poilane 2922*, April 1922. Here apparently falls: *Nielsen 607 E.*, Nhatrang, Indochina, May 1929.

A characteristically xerophilous plant, with small and coriaceous leaves. It belongs in the affinity of *C. robustus* Kurz, from Southern Burma.

***Croton scopuligenus* sp. nov.**

Frutex humilis vix 0.30 m. altus. Apicibus cupreato-lepidotis, foliorum delapsorum stipulis triangularibus obsitis. Foliis 4.5–2 cm. longis, 4–2 cm. latis, ovatis, apice late acuminatis saepius apiculatis, basi rotundatis, supra brunneis vel rubro-brunneis, subtus subargenteo-lepidotis, venis utrinque ca. 4-jugis, primo jugo plus minusve adscendente, caeteris late patentibus; petiolo 0.5–1.5 cm. longo, lepidoto, apice glandulis 2 patelliformibus insignito, basi stipulis triangulari-acuminatis ad 3 mm. longis aucto. Inflorescentiis, ut videtur, brevibus, conferte lepidotis. Floribus ♂ haud visis. Perianthio ♀ ca. 2 mm. magno, pedicello 1–2 mm. longo; petalis minimis vel nullis; lobis triangularibus 2 mm. longis, basi 2 mm. latis, lepidotis; ovario videtur turbinato, i.e. apice latiore, 2 mm. longo, 4 mm. lato, toto conferte lepidoto; stylis 3, nigricantibus, liberis, quove fere ad basim partito.

INDO-CHINA: Annam, "Signal de 1200 m." west of Cana, *Evrard 2392*, November 1925.

This new species is certainly not *C. argyratus* Bl. or the species immediately allied with it (*C. budopensis*, *C. potabilis*). It agrees only with *C. kongensis* Gagnep., having an essentially similar ♀ flower. It differs from *C. kongensis*, however, in the venation and the shape of the leaves, these being as a rule manifestly lanceolate in that species; in the much larger and much more persistent petiolar stipules; in the habit and size; in the range, *C. kongensis* being restricted to Laos and Yunnan. *C. scopuligenus*, like *C. ignifex*, seems to be one of the xerophilous shrubs characteristic of the vegetation of the coast of southern Annam.



***Croton phuquocensis* sp. nov.**

Arbor videtur vel frutex. Apicibus parcissime stellatis, subglabris. Foliis oblanceolatis vel ellipticis, in sicco brunneis, 15–7 cm. longis, 4–3 cm. latis, apice abrupte acuminatis, ad basem longe cuneatis, margine subintegro, venis ca. 10–16 jugis adscendentibus, limbo subtus minute papilloso-punctulato; petiolo gracili 1.5–4 cm. longo, apice glandulis 2 parvis patelliformibus ornato. Inflorescentiis subspicatis simplicibus. Floribus ♂ haud visis. Floribus ♀: perianthio e lobis imbricatis, ovarium totum occultantibus, ca. 3 mm. longo, 6 mm. lato; petalis nullis; lobis ovatis, latius imbricatis, subpetaloideis, apice plus minusve callosis, 2.5 mm. longis, ca. 2 mm. latis; glandula ad basem lobis cujusvis 1, utrinque glandulis 2 multoties minoribus obsita, discum totis sub ovario formantibus; ovario trigono depresso-globoso, 1 mm. longo, 2 mm. lato, luteo-lepidoto, apice parcius setuloso; stylis 3, liberis, late patentibus, apice bifidis.

INDO-CHINA: Cochinchina, Island of Phu-quoc, Mt. Retram, *Pierre* 6255, 1874.

Gagnepain has determined this plant as *C. leiophyllus* Muell.-Arg. (in Lecomte, Fl. Gén. Indo-Chine 5: 273. 1925), which I believe to be an error. The perianth and the venation are characteristic.

***Croton pontis* sp. nov.**

Frutex ver arbuscula. Apicibus subglabris, trichomatibus stellatis ca. 15-radiatis parcius adpersis. Foliis in sicco brunneis, 15–9 cm. longis, 4–2 cm. latis, glabris, chartaceis, lanceolatis, utrinque acutatis, venis ca. 7–9-jugis, adscendentibus, a margine 5–3 mm. anastomosantibus, margine serrato (serraturis ca. 5–7 per cm. 2 longitudinis); petiolo 1–1.5 cm. longo, apice utrinque glandulis disciformibus stipitatis 2 onusto. Inflorescentiis subspicatis ca. 10 cm. longis, gracilibus, floribus ♀ singulis, ♂ ad 5 capitulatis. Floris ♂ alabastro ca. 2 mm. magno, staminibus ca. 12. Floribus ♀: perianthio ca. 2 mm. lato, 4 mm. longo, pedicello 1–1.5 mm. longo; petalis nullis; lobis ligulatis, apice acutatis 1.5 mm. longis, 1 mm. latis, glabris; ovario tomentuloso albicante vel lutescente, ca. 1.5 mm. magno; stylis liberis, 3, ca. 2.5 mm. longis, quove ad medium circa partito.

INDO-CHINA: Tonkin, gully above the "Pont des Linhs," Vin Yen Province, at 50 m. alt., *Pételot* 6504, April 1935.

*Croton pontis* belongs to sect. *Gymnocroton* Baill. It differs from *C. Hookeri* Croiz., discussed in a previous issue of this Journal (Jour. Arnold Arb. 21: 498. 1940), in the definitely more lanceolate and more deeply serrate foliage, in the much narrower lobes of the ♀ calyx, and in intangibles throughout. It is different from *C. phuquocensis* in every detail of its ♀ flower.

***Croton caryocarpus* sp. nov.**

Arbor parva ad 5–6 m. alta. Apicibus tomentellis lutescentibus indumento interdum sublepidoto, demum glabratis. Foliis 13–8 cm. longis, 5–3 cm. latis, ellipticis vel elliptico-lanceolatis, subcoriaceis vel firme chartaceis, in sicco pallide olivaceis vel pallide luteo-brunneis, adultis glabratis, margine subcartilagineo obscure dentato, venis ca. 9–12-jugis, gracilioribus, late patentibus, sub marginem inconspicue anastomosantibus; petiolo argillaceo tomentoso, 0.5–3 cm. longo, glandulis 2 in apice ad limbum valde obscuris. Inflorescentiis 2-sexualibus, terminalibus vel axillaribus sub-



terminalibus, 10–15 cm. longis. Floribus ♂ : perianthio ca. 5–6 mm. longo, 2–3 mm. lato, pedicello ca. 3 mm. longo; staminibus ca. 10, filamentis ad 1 cm. longis, petalis lobis subsimilibus 2–3 mm. longis, lanceolato-ovatis vel obovatis, glandulis intrapetiolearibus ca. 5. Floribus ♀ : perianthio ca. 5 mm. lato, 2 mm. longo, pedicello crassiore 2.5–3 mm. longo; petalis nullis; lobis carnosulis, apice glandulosis, interdum coarctatis, 2 mm. longis 3 mm. latis; ovario ellipsoideo aureo-lepidoto, 4 mm. longo, 3 mm. crasso; stylis 3 liberis, nigris, quove paulo supra basem bifido, ad 3 mm. longo; disci glandulis (videtur) valde inconspicuis; fructu magno, ellipsoideo, 3 cm. longo, 2 cm. lato, drupam mentiente, vix trisulco durissimo, toto tenuissime aureo-tomentello, indumento vulgo detergibili.

INDO-CHINA: Tonkin, between Kep and Pho Vi, Bac Giang Province, in light forest, *Pételot* 6487, May 1936.

There seems to be a close agreement between the holotype and the following collections: *Bon* 4678, Western Tonkin; *Poilane* 1468, Annam, Tourane 1920; *J. & M. S. Clemens* 3690 and 3968, Annam, Tourane and vicinity. Gagnepain assimilates this new species into *C. Joufra* (in Lecomte, *Fl. Gén. Indo-Chine* 5: 280. 1925), to which he attributes the range Tonkin-Annam-Siam-Cochinchina. This range is the result of the misinterpretation of several species as *C. Joufra*, which to the best of my knowledge has not been found so far in Indochina. *Griffith* 4776 and *Shaik Mokim* from Assam and Upper Burma are two of the numerous specimens that represent in our herbarium the true *C. Joufra* Roxb. This species and *C. caryocarpus* differ less in definite characters than in sums of intangibles. *Croton caryocarpus*, so far as seen, does not have petals in the ♀ flower, its leaves are more coriaceous, its fruit is thicker, and its seed has a smaller hilum than in *C. Joufra*. It is worthy of note that many are the species of *Croton* in Asia and Australasia which have similar vegetative characters but differ considerably in the size and nature of their fruits. It is due to this peculiarity that *C. oblongifolius*, *C. Joufra*, *C. argyratus* and *C. laevigatus* are confused with many other actually unrelated species in every work that deals with the flora of the tropical Far East.

***Croton Kurzii*** nom. nov.

*Croton flocculosus* Kurz, *For. Fl.* 2: 375. 1877; Hooker f., *Fl. Brit. Ind.* 5: 394. 1887. *Non Geiseler* (1807).

Kurz's binomial is a later homonym of Geiseler's (*Crot. Monogr.* 14. 1807). The material which represents *C. flocculosus* Kurz in the Kew herbarium, according to notes I hastily took in the winter of 1938, resembles *C. yunnanensis* W. W. Smith, from S. W. China, differing from it in the much thinner deciduous indumentum and the range. *Croton Kurzii* is not represented in our herbarium.

***Croton limiticola*** sp. nov.

Frutex bipedalis. Foliis 22–10 cm. longis, 9–3.5 cm. latis, subpergameneis, elliptico-lanceolatis vel oblongo-lanceolatis, apice acuminatis, basi cuneatis vel cuneato-rotundatis, venis primariis utrinque 7–13 bene anastomosatis, latiuscule adscendentibus, margine distante obiterque crenato-serrato, glandula in crena quave stipitata disciformi subsessili; indumento



toto in ramulis foliisque e pilis stellatis robustioribus lutescentibus dissitis; petiolo 0.5–3.5 cm. longo, apice sub lamina ipsa glandulis 2 disciformibus insignito. Inflorescentiis spiciformibus axillaribus vel apicalibus, 1- vel 2-sexualibus, ad 7 cm. longis. Floribus ♂: perianthio vix tomentoso, 8 mm. lato, lobis 5 ovato-ellipticis, 3 mm. longis, 2.5 mm. latis, petalis in laciniis 7–8 ciliato-fimbriatis dissitis, ca. 2 mm. longis, staminibus 13–15. Floribus ♀: perianthio vix tomentoso profunde partito ad 1 cm. lato, pedicello 8 mm. longo, lobis 5, lanceolatis, apice breviter acuminatis, integerrimis, eglandulosis, 5 mm. longis, 2 mm. latis, petalis minutis vel (videtur) interdum nullis; ovario ellipsoideo grosse lepidoto, lutescente, ad 2.5 mm. longo, disco (videtur) nullo; stylis ad 3 mm. longis, stigmatate crasso ad 1 mm. lato, haud revoluta, sulcata, apicem in processum producta, vix papilloso; capsula aureo-lepidota, profunde trigona, 5 mm. longa, 5 mm. crassa.

INDO-CHINA: Tonkin, Taai Wong Mo Shan and vicinity, *Tsang 29584*, Sept. 1939.

A strongly marked species, related to *C. erythrostachys* Hook. f. and, more distantly, to *C. Merrillianus* Croiz. The foliage is unlike that of *C. Hancei* Benth.

***Croton laevigatus*** Vahl, *Symb.* **2**: 97. 1791; Muell.-Arg. in DC. *Prodr.* **15**(2): 523. 1866; Merrill in *Lingn. Jour. Sci.* **13**: 59. 1934.

No ♀ flowers were left on the holotype of *C. laevigatus* when I inspected it in February 1939. Since the species of its affinity are numerous and can be distinguished only when ♀ flowers and fruits are available, the value of the Vahl's holotype as a taxonomic standard is now much impaired. It is convenient, however, to retain the binomial for the species of *Croton* in Hainan which most closely matches the leaves of Vahl's holotype. I accept, consequently, as *C. laevigatus* the following specimens, all collected in Hainan: *Lau 108, 1350; Chun & Tso 70281; How 70471; Liang 62777, 63311, 63321; Wang 34723, 34766, 35084.*

*Croton laevigatus* does not occur outside of Hainan, so far as I know at present. It is not *C. oblongifolius* Roxb., an isotype of which is represented in our herbarium by a fragment with ♀ flowers kindly given to the writer by Prof. H. Humbert of the Museum of Natural History of Paris.

***Croton Laui*** Merrill & Metcalf, *Lingn. Jour. Sci.* **16**: 389. 1937.

*Croton hainanensis* Merr. & Metc. op. cit. 391. Syn. Nov.

The variability of the indument in good series of specimens is such that two distinct species cannot be recognized. *How 70548* connects *C. hainanensis* with *Lau 1566*, type of *C. Laui*.

***Croton cascarilloides*** Raeuschel, *Nomencl. Bot.* ed. 3. 280. 1797; Merr. *Trans. Amer. Phil. Soc.* ii. **24**(2): 234. 1935 (Comment. Loureiro Fl. Cochinch.).

*Croton punctatus* Lour. *Fl. Cochinch.* 581. 1790. Non Jacq.

*Croton Cumingii* Muell.-Arg. *Linnaea* **34**: 101. 1865, et in DC. *Prodr.* **15**(2): 566. 1866; Gagnepain in Lecomte, *Fl. Gén. Indo-Chine* **5**: 264. 1925.

*Croton Cumingii* var. *angustifolius* Gagnep. l.c. Syn. Nov.

*Croton Pierrei* Gagnep. *Bull. Soc. Bot. France* **68**: 558. 1921, et in Lecomte, *Fl. Gén. Indo-Chine* **5**: 265. Syn. Nov.

*Croton Cumingii* var. *angustifolius* Gagnep. is apparently based upon shoots of new growth arising from wood that has been dormant a long time, and it cannot be accepted otherwise than as a vegetative state of the



typical form. *Poilane 1725*, the holotype of Gagnepain's variety, is a good match of *Clemens 3929*, collected near Hué. Another so-called variety under *Croton*, having the same status as *C. Cumingii* var. *angustifolius*, is the West Indian *C. origanifolius* Lam. var. *abbreviatus* Urban.

Gagnepain separates *C. Pierrei* from *C. cascarilloides* in his key by differences in the styles. His faith in such characters is well known. I regret that I can not follow him, as I can find no difference between *Pierre 6233*, the holotype of *C. Pierrei*, of which a fragment is available here, and a score of specimens which certainly belong to *C. Cumingii* Muell.-Arg.

### Alchornea Swartz

#### *Alchornea androgyna* sp. nov.

Arbuscula ad 4–5 m. alta. Innovationibus pube subfasciculata hispido-tomentellis. Foliis ovato-ellipticis vel ellipticis, 18–10 cm. longis, 9–6 cm. latis, subtus ad venas venulasque hispido-velutinosus, supra glabrescentibus, margine dentato-serratis, dentibus apice subcallosis breviter cuspidato-acuminatis, basi plus minusve rotundatis, glandulis habitu stipulaceo in apice petioli anticis 2, venis arcte adscendentibus utrinque ad 4–5-jugis, primo jugo longitudinem dimidiam laminae subaequante ergo nervatione eximie 3-plinervia, petiolo 2–4 cm. longo. Inflorescentia terminali, paniculatum decomposita: floribus ♂ glomerulatis, ♀ singulis. Flore ♂ sessili, minimo, lobis late triangularibus vel ovatis, subscariosis, vix 0.75–1 mm. longis, staminibus ca. 5. Flore ♀ sessili vel breviter pedicellato basi utrinque valde glanduloso, lobis lineari-acuminatis ad 2 mm. longis; ovario ellipsoideo ad 3 mm. longo, 2 mm. lato; stylis 3, crassiusculis, subulatis, late patentibus, tenuissime papillosis vel epapillosis, apice vix convolutis vel patentibus.

INDO-CHINA: Tonkin, between Kep and Pho Vi, Bac Giang Prov., *Pételot 6262*, June 1936.

The androgynous cymes and the 3-plinerved venation distinguish this new species from *A. rugosa* Muell.-Arg., which it superficially resembles. *Alchornea annamensis* Gagnep., which has 3-plinerved or nearly 3-plinerved venation, is altogether glabrous and has a much more slender inflorescence.

### Ptychopyxis Miquel

As treated here, *Ptychopyxis* Miq. (Fl. Ind. Bat. Suppl. 402. 1860) includes *Podadenia* Thw. (En. Pl. Zeyl. 273. 1861) and *Calpigyne* Bl. (Mus. Lugd. Bat. 2: 193. 1856). Blume's genus has priority but should be rejected as a *nomen confusum*. Blume erroneously believed that different plants, perhaps not even related as to family, constituted *Calpigyne*. He described the flowers of this genus in about 60 words, of which over half deal with the ♂ perianth. This perianth is totally alien to the ♀ plant which typifies *Calpigyne* in the herbarium of Leiden. Blume himself probably became aware of the error he had made, because the ♂ specimens from Celebes, cited first by him in the description of *Calpigyne*, cannot now be found (Prof. J. Lam, *in litt.*). Considering that to use *Calpigyne* a *descriptio emendata* would be necessary, it seems advisable to apply Art. 64



of the Rules of Nomenclature, taking up *Ptychopyxis* in substitution for *Calpigyne*, *nomen confusum propositum*.

Ridley (Fl. Malay Pen. **3**: 295. 1924) recognizes four species of *Ptychopyxis* having fruits both "small smooth" (*P. angustifolia*) and "with long processes" (*P. Caput-Medusae*). By so doing Ridley denies generic validity to the nature of the epicarp in this group. The soundness of Ridley's understanding of *Ptychopyxis* is proved by the material in our herbarium. *Maingay 1445* and *Henderson 34800*, representing *P. Caput-Medusae*, cannot be separated generically from *Thwaites 3428*, an isotype of *Podadenia Thwaitesii*; both of these species have fruits of the same nature and vegetative and floral characters which are similar. Such specimens as *Elmer 21524*, from Borneo, suggest at first sight an entity which differs from *Ptychopyxis* by having a much smaller fruit without processes. The value of this character for generic differentiation, however, practically vanishes when it is seen that *Krukoff 4094*, from Sumatra, has a smooth fruit 3.5 cm. long and 2 cm. broad. Thus the only character that could be used to break up *Ptychopyxis* into two genera is the nature of the indument of the capsule. The value of this character is far from decisive in the Euphorbiaceae, so that it seems altogether advisable to accept the following classification:

(1) **Ptychopyxis** Miq. subg. **Podadenia** (Thw.) comb. nov.

Fructibus majusculis, epicarpio processibus elongatis ornato.

Typus: *Ptychopyxis Caput-Medusae* (Hook. f.) Ridley.

(2) **Ptychopyxis** Miq. subg. **Neocalpigyne** subgen. nov.

Fructibus minoribus, epicarpio leviori tomentello.

Typus: *Ptychopyxis bacciformis* Croiz.

(1) Subg. **Podadenia**

**Ptychopyxis Thwaitesii** (Baill.) comb. nov.

*Podadenia Thwaitesii* (Baill.) Muell.-Arg. in DC. Prodr. **15**(2): 791. 1866; Hooker

Fl. Brit. Ind. **5**: 423. 1887; Pax & Hoffm., Pflanzenr. **63** (iv. 147. vii): 20. 1914.

*Podadenia sapida* Thwait. Enum. Pl. Zeyl. 273. 1861.

The glandular indumentum of the ovary is altogether peculiar and is possibly formed by staminodes becoming connate with the epicarp.

**Ptychopyxis Caput-Medusae** (Hook. f.) Ridl. Fl. Malay Penins. **3**: 295. 1924.

*Mallotus ? Caput-Medusae* Hook. f. Fl. Brit. Ind. **5**: 443. 1887.

Hooker quotes Maingay to the effect that the processes of the fruit are stinging and describes them as "spines."

(2) Subg. **Neocalpigyne**

**Ptychopyxis costata** Miq. Fl. Ind. Batav. Suppl. 402. 1860; Ridley, Fl. Malay Penins.

**3**: 295. 1924; Hook. f. Fl. Brit. Ind. **5**: 455. 1887, et in Hook. Ic. **18**: pl. 1703. 1887.

The specimen available here has no fruit. Ridley thus describes the indumentum: "tomentum bright brown when dry."

**Ptychopyxis angustifolia** Gage, Rec. Bot. Surv. India **9**: 248. 1922; Ridley, Fl. Malay Penins. **3**: 296. 1924.



Ridley erroneously lists this binomial as a mss. name of Gage. The description of Gage strongly suggests *P. costata* Miq., but Ridley maintains *P. angustifolia* as distinct. I can find no difference between the fruit of the former and of the latter, as described by Ridley.

**Ptychopyxis javanica** (J. J. Sm.) comb. nov.

*Podadenia javanica* J. J. Sm. Mededeel. Dept. Landbouw. **10**: 387. 1910; Pax & Hoffm. Pflanzenr. **63** (iv. 147. vii): 21. 1914.

Smith does not describe the ♀ flower or the fruit. The two specimens previously cited, *Yates 2638* and *Krukoff 4094*, from the east coast of Sumatra, might belong here, from description.

**Ptychopyxis philippina** sp. nov.

Arbor innovationibus pube velutinoso-hispida aurantiaco-brunnea indutis. Foliis 15–10 cm. longis, 5–3.5 cm. latis, ellipticis, apice breviter acuminatis, basi rotundatis vel subcuneatis, integerrimis, cinereis, supra nitidis, venis ca. 7-jugis adscendentibus, glabris vel glabratis; glandulis in lamina secus costam 2–4; petiolo ad 2 cm. longo, stipulis petiolaribus obscuris glandulosis. Floribus ♂ in cymulis racemosis, perianthio in alabastro globuloso ca. 2 mm. magno, pedicello ca. 3 mm. longo rufo-hispidulo, staminibus ca. 40–50 late triangularibus, apice in connectivo late trigono productis; pistillodio minimo ellipsoideo 1 mm. longo. Floribus ♀ in cymis subspicatis subsessilibus oligofloris: perianthio 1 mm. alto, grosse lobulato, lobis ca. 5, petalis (staminodiis ?) minutis lobis similibus crassis cum calycis lobis alternatibus; ovario globuloso, 3.5 mm. magno, stylo brevissimo, stigmatibus papillosis reflexis 1 mm. longis; fructu capsulari, tenuiter pubescente, 3–4-loculari, indumento brunneo-aurantiaco, 1.5–2 cm. magno.

PHILIPPINE ISL.: Mindanao, Surigao, *Wenzel 2710* (♀), *3501* (♂), distributed as "*Podadenia* ?".

**Ptychopyxis frutescens** nom. nov.

*Calpigyne frutescens* Bl. Mus. Lugd. Bat. **2**: 193. 1856; Muell.-Arg. in DC. Prodr. **15**(2): 1255. 1866; Pax & Hoffm. Pflanzenr. **63** (iv. 147. vii): 254. 1914. *Syn. Nov. quoad spec. ♀ tantum.*

Foliis coriaceis brunneis bene clathratis, 14–8 cm. longis, 5–3 cm. latis, petiolo brevissimo. Flore ♀: calyce ca. 1.5 mm. alto, grosse lobulato, lobis minute triangularibus carnosulis, stylis 3 papillosis ad 1.5 mm. longis.

BORNEO: Pammaton leg. (Korthals) in herb. Lugd. Batav. [*frustulum in herb. Arnold. Arb. cum icone. photographica*].

The description is based upon a photograph and a fragment of the ♀ plant used by Blume in the generic description of *Calpigyne*. *Ptychopyxis frutescens* is a new name, not a new combination (see Rules Inter. Nomencl. 1935, Art. 69, last paragraph).

**Ptychopyxis bacciformis** sp. nov.

*Coelodepas* sp.? Merr. Univ. Calif. Publ. Bot. **15**: 156. 1929.

Innovationibus parcius pubescentibus vel glabratis, pube velutinoso-olivaceo-brunnea. Foliis 18–9 cm. longis, 5–3.5 cm. latis, ellipticis, ad basem longe ad apicem breviter acuminatis, integris, coriaceis, supra nitidis, optime clathratis, venis utrinque ca. 10-jugis, pilis simplicibus parcissime indutis, glandulis ad radicem ipsam petioli 2 cautissime inquirendis; petiolo hispidulo apice incrassato calloso 2–2.5 cm. longo, stipulis petiolaribus



glandulosis obscuris. Cymis ♀ fructigeris terminalibus, racemosis, velutinis, effusis, sat gracilibus at vix herbaceis, 12–20 cm. longis. Calyce sub fructu vix 3 mm. lato, lobis minimis 4–5; capsula velutinoso habitu bacciformi, indumento tomentello laete brunneo, 1.3–1.7 cm. lata, 1.5 cm. longa; semine vix maturo arillo venuloso praedito, ca. 1 cm. magno, dorso rotundato, facie ventrali applanato.

BRITISH NORTH BORNEO: Elphinstone Prov., Tawao, *Elmer 21524*, 1922–1923.

A second collection is *Elmer 21771* from the same locality. The leaves are more definitely lanceolate than are those of *P. philippina*.

**Ptychopyxis Poilanei** sp. nov.

Arbor 18–20-metralis, innovationibus brevissime velutinosus, laete brunneis. Foliis 12–8 cm. longis, 4.5–2 cm. latis, ellipticis, apice brevissime acuminatis basi late rotundatis, coriaceis, integerrimis, venis adscendentibus utrinque ca. 8-jugis, glandulis ad basim laminae 2–4 lente cautissime inquirendis; petiolo ca. 2 cm. longo. Floribus ♂ tantum visis, in inflorescentiis velutinosus 2–4 cm. longis lateralibus cymulosis, bracteolis ad 4 mm. longis fultis; alabastro ca. 3 mm. magno, lobis crassis anisomeris 3–4; staminibus ca. 30–40 in acie 3–4-plici (videtur) alternatibus, pubescentia (staminodiis immaturis ?) hispida confertissima intermixtis, ca. 1 mm. longis.

INDO-CHINA: Annam, Nhatrang Prov., north of Nuh-hoa, eastern slopes of the "Massif de la Mère et de l'Enfant," *Poilane 6398*.

The vegetative characters much resemble those of *Meliosma cambodiana* Pierre, but the ♂ flower is characteristic of *Ptychopyxis*.

**Coelodepas** Hasskarl (Nomen Genericum Conservandum Propositum)  
(*Nephrostylus* Gagnepain; *Calpigyne* auct. non Blume)

The citations given under *Coelodepas* and *C. bantamense* by Pax & Hoffmann (Pflanzenr. **63** [iv. 147. vii]: 268–269. 1914) include several errors. They give 1855 as the year of publication of the genus, which was actually published only one year later (Versl. Med. Akad. Wetensch. Amsterdam **4**: 139. 1856). The spelling of the generic name appeared at first in the Greek version, *Koilodepas*, and was altered to *Coelodepas* in the following year (Flora **40**: 531. 1857). The type-binomial remained a *nomen nudum* until 1858 (Hort. Bogor. Descr. **1**: 44). This publication is cited by Pax & Hoffmann as "Retzia I. (1858) 45," but the actual title is "Hortus Bogoriensis descriptus sive Retziae Editio Nova." By citing "Retzia I" a very different publication is indicated, "Retzia sive Observationes Botanicae . . . Pugillus Primus," published by Hasskarl in 1855.

The validity and priority of the spelling *Koilodepas* over *Coelodepas* is unquestionable. *Koilodepas* is not a "clearly unintentional error" (Art. 70) and Hasskarl, having published it, had no right to alter it. The spelling *Coelodepas* has been retained, however, by every author who has dealt with the genus since Hasskarl's time and hence should be listed in the *nomina generica conservanda*.

It is worthy of note that Pax & Hoffmann (Engl. & Prantl, Nat. Pflanzen-



fam. ed. 2, **19**(c): 124, 207. 1931) separate *Coelodepas* and *Nephrostylus* by 113 genera, although they are synonymous.

***Coelodepas hainanense*** (Merr.) comb. nov.

*Calpigyne hainanensis* Merr. Jour. Arnold Arb. **6**: 135. (July 30) 1925.

*Nephrostylus Poilanei* Gagnep. Bull. Soc. Bot. France **72**: 476. (August 4) 1925, et in Lecomte, Fl. Gén. Indo-Chine **5**: 327. 1925.

No differences can be found by which the Hainan and Indo-China material can be distinguished. The fact that *Nephrostylus* is a synonym of *Coelodepas* can easily be verified, even without specimens, by comparing the following illustrations: (1) *Coelodepas Wallichianum* Benth. in Hook. Ic. **13**: 69. pl. 1288. 1879; (2) *Coelodepas bantamense* Hassk. in Pflanzenr. **63** (iv. 147. vii): 269. fig. 42. 1914; (3) *Nephrostylus Poilanei* Gagnep. in Lecomte, Fl. Gén. Indo-Chine **5**: 328. fig. 37. 1925. One of the characters of *Coelodepas* that will bear closer study is the degree of accrescence of the ♀ calyx, this probably having sectional or subgeneric significance.

### **Macaranga** Thouars

***Macaranga Poilanei*** Gagnep. Bull. Soc. Bot. France **69**: 703. 1922, et in Lecomte, Fl. Gén. Indo-Chine **5**: 448, fig. 51, 1. 1926.

*Mallotus Tsiangii* Merr. & Chun, Sunyatsenia **1**: 62. 1930; Chun, Ic. Pl. Sin. **4**: 12. pl. 162. 1935. Syn. Nov.

The material in our herbarium is ample to establish that only one entity is involved under these two binomials. The range of *M. Poilanei* as now known includes Kwangtung, Hainan, Tonkin and Northern Annam.

***Macaranga trigonostemonoides*** sp. nov.

Frutex ad 2 metr. altus, innovationibus hispide puberulis, sordide brunneis. Foliis 8–5 cm. longis, 3–1.75 cm. latis, elliptico-lanceolatis, apice breviter cuspidato-caudatis, basi cuneato-rotundatis, praeter venas hispidopuberulas vel glabratas glabris, margine obscure crenatis, glandula e vena in crena quave sessili, venis optime penninerviis, utrinque ca. 6-jugis, limbo ad basim glandulis pustulosis marginalibus 2–4 notato, subtus minute atroglanduloso; petiolo puberulo 1.5–2 cm. longo. Inflorescentia ♀: axi lentiusculo, sat rigido velutinoso, ad 10–12 cm. longo, flores plures (5–8) quorum 1 saepius apicalem ferente; bracteis floralibus foliaceis ovatis vel ovato-cuspidatis, sessilibus, margine obscure serratis, ceraceo-glandulosis, 1–1.5 cm. longis, 0.7–1.10 cm. latis; perianthio 3 mm. lato, saepius 4-lobo, ovario 2 mm. longo, 3 mm. lato processibus glabris carnosulis ad costam coccorum parcius obsito, caeterum crustaceo-glanduloso sublevi, pedicello ad 2 mm. longo, stylis vix papillosis, 1.2–1.5 cm. longis haud involutis.

INDO-CHINA: Taai Wong Mo Shan and vicinity, near the Kwangtung border, Tsang 29230, June 1939, fairly common in thickets on sandy soil.

Although this new species resembles *M. Poilanei* Gagnep., *M. bracteata* Merr., and *M. Esquirolii* Rehd., it is manifestly different from these three species. Tsang 30351, 29368 belong here; Tsang 29191, 29543, which are only ♂, probably belong here.

***Macaranga rosuliflora*** sp. nov.

Frutex videtur. Ramulis strictis, glabris, rubescentibus, sub apicibus ceraceo-glandulosis, setaceo-stipulosis. Foliis 9–3 cm. longis, 5–1 cm. latis,



elliptico-lanceolatis, apice longiuscule acuminatis, basi subcuneatis levissime auriculatis, venis late adscendentibus utrinque ca. 7-jugis, glabratis vel glabris, margine subintegro, limbo subtus minutissime glandulis luteis obsito. Inflorescentia ♂: rachide gracillimo spiciformi ad 5 cm. longo; bracteis squamulosis integris triangularibus vix 1 mm. longis, quave perianthia 3-4 axillante; perianthio minimo ca. 3 mm. lato, staminibus ad 15. Inflorescentia ♀: pedunculo alari elongato, 4-8 cm. longo, apice verticillatim 3-4-bracteato, florem unicum apicalem (videtur) ferente; bracteis foliis omnino similibus at minoribus 1-2 cm. longis, 3-6 mm. latis; calycis lobis sub fructu lineari-lanceolatis ad 2 mm. longis; capsula submatura vix 7-8 mm. lata glandulis ceraceis detergibilibus exceptis levi, coccis 2 subdivergentibus inde fructu primo intuito nempe subbicorni gibboso; semine globuloso 3.5 mm. magno, arillodio striato, hilo magno.

INDO-CHINA: Sai Wong Mo Shan (Sai Vong Mo Leng), near the Indo-China-Kwangtung border, *Tsang 30591*, May-December 1940.

The characters of the holotype of this species may not be found to match exactly those of the majority of the specimens. There is an indication in the material seen that plants which are prevailingly ♂ have only small or very small bracts on their ♀ axes. *Tsang 30591* is almost wholly ♀, and this may account for the large foliaceous bracts which it exhibits in the fruiting stage. It is likely, consequently, that *M. rosuliflora* is represented by the following additional numbers having small bracts: *Henry 12143*; *Tsang 22049, 22428, 22681, 23814, 24213*; *Liang 69601, 70157*; *Teng 90803* from Yunnan, Kwangsi, Kweichow and Kwangtung. The majority of these collections have been determined as *Mallotus Tsiangii* Merr. & Chun, which is a synonym of *M. Poilanei* Gagnep. A specimen from Pierre's herbarium [a fragment available here], credited to "Masters, Assam" and labelled *Macaranga digyna* Muell.-Arg., suggests this new species and may in fact belong to it. It hardly belongs to *M. digyna*, to judge from Wight's illustration (Ic. Pl. Ind. Orient. 5: pl. 1884. 1852).

### **Epiprinus** Griffith

(*Symphyllia* Baill., *Adenochlaena* auct. non Baill.)

The following specimens are available to me: (1) *Griffith*, Malacca, isotype of *Epiprinus malayanus* Griff.; (2) *Thomson* "Claoxylon 14," isotype of *Symphyllia mallotiformis* Muell.-Arg.; (3) *Griffith 4913*, isotype of *Symphyllia siletiana* Baill.  $\alpha$  *trichantha* Muell.-Arg.; (4) *Thwaites 2111* (a fragment), holotype of *Centrostylis zeylanica* Baill. in herb. Paris; (5) *Balansa 3246*, isotype of *Epiprinus Balansae* Gagnep.

This material shows that *Centrostylis*, treated by many authors as congeneric with *Adenochlaena*, is not congeneric with *Epiprinus*. This material proves, likewise, that *Symphyllia* and *Epiprinus* are congeneric. The differences separating *E. malayanus* and *S. siletiana* are: (1) the number of the stamens, this being 8-10 in *E. malayanus* and not over 4-5 in *S. siletiana* and its group; (2) the degree of accrescence of the ♀ calyx, which is greater in *E. malayanus* than in *S. siletiana* and its group. It is worthy of note, however, that *E. malayanus* is a larger and coarser plant than *S. siletiana* and the species in its affinity.



Since *E. Balansae* is intermediate in its characters between *Epiprinus* and *Symphyllia* and these two entities are otherwise closely related, I propose the following disposition:

**Epiprinus** Griff. Notul. Pl. As. **4**: 487–489. 1854; Muell.-Arg. in DC. Prodr. **15**(2): 1024. 1866; Hook. f. Fl. Brit. Ind. **5**: 463. 1888; Pax & Hoffm. Pflanzenr. **68** (iv. 147. ix–xi): 109. 1919, et in Engl. & Prantl, Nat. Pflanzenfam. ed. 2. **19**(c): 148. 1931.

*Symphyllia* Baill. Etud. Gén. Euphorb. 473. pl. 11. fig. 6–7. 1858; Muell.-Arg. in DC. Prodr. **15**(2): 763. 1866; Pax & Hoffm. Pflanzenr. **44** (iv. 147. ii): 15. 1910, et in Engl. & Prantl, Nat. Pflanzenfam. ed. 2, **19**(c): 123. 1931. Syn. Nov.

*Adenochlaena* Baill. sect. *Symphyllia* Hook. f. Fl. Brit. Ind. **5**: 418. 1887.

(1) **Epiprinus** subg. **Euepiprinus** subg. nov.

Calyce ♀ accrescenti, fructu sat magno, foliis majusculis distinguitur. Species typica: *E. malayanus* Griff.

(2) **Epiprinus** subg. **Symphyllia** (Baill.) subg. nov.

Calyce ♀ vix accrescenti, fructu nec ultra 1–1.5 cm. magno, foliis minoribus dignoscitur. Species typica: *E. siletianus* (Baill.) Croiz.

**Epiprinus mallotiformis** (Muell.-Arg.) comb. nov.

*Symphyllia mallotiformis* Muell.-Arg. Linnaea **34**: 156. 1865, et in DC. Prodr. **15**(2): 764. 1866; Pax & Hoffm. Pflanzenr. **44** (iv. 147. ii): 15. 1910; Gamble, Fl. Presid. Madras **2**: 1323. 1925.

*Adenochlaena indica* Bedd. ex Hook. f. Fl. Brit. Ind. **5**: 418. 1887. Syn. Nov.

Much more delicate in all its parts than *E. malayanus*. The stamens are 4, not 8 as in that species. Apparently restricted to the Deccan.

**Epiprinus siletianus** (Baill.) comb. nov.

*Symphyllia siletiana* Baill. Etud. Gén. Euphorb. 474. 1858; Muell.-Arg. in DC. Prodr. **15**(2): 764. 1866 [*Silhetiana*]; Kurz For. Fl. Brit. Burma 378. 1877 [*Silhetana*].

*Adenochlaena silhetiana* Hook. f. Fl. Brit. Ind. **5**: 418. 1887.

Two specimens from Yunnan, S. W. China, which have been referred by Merrill to *Homonoia* as probably representing *H. symphylliaefolia* Kurz (Lingn. Jour. Sc. **19**(2): 188. 1940) appear to belong here. They are: *Henry 13161* and *Wang 77905*. Another unreported collection is *Wang 80117*, from the same Province. It is possible that *E. hainanensis* Croiz. from Hainan is scarcely better than a variety of *E. siletianus*. *Homonoia* does not belong in the same affinity with *Epiprinus*; branched stamens occur in certain species of *Macaranga*, for instance, *M. Daveyi*.

**Epiprinus lanceifolius** sp. nov.

Arbor vel frutex. Innovationibus parcissime stellato-tomentulosis mox glabratis. Foliis 17–9 cm. longis, 5–2.5 cm. latis, exquisite elliptico-lanceolatis, apice caudato-acuminatis interdum subfalcatis, glaberrimis, supra nitidis, venis utrinque ca. 7–11-jugis, patentibus, trabeculis manifestis, margine laminae integro, basi glandulis 2 obscurissimis maculato; petiolo apice incrassato, ibique interdum more *Alchorneae* ssp. stipellato, glabro, 0.3–1.5 cm. longo. Inflorescentiis secus cymas spicatas lentas in glomerulis confertis dispositis, ♂ tantum visis, axi tomentello, pallide luteo. Perianthio subsessili, basi interdum glandulifero, ca. 3 mm. lato, 2 mm. longo, lobis 4 integerrimis, habitu cochleatis, ad 1.25 mm. longis, staminibus 4; pistillodio columnari, sat evoluto, ad 1 mm. longo, apice irregulariter apiculato-incrassato.



INDO-CHINA: Tonkin, Pho Ho, *Du Pasquier* 3060 [Pételot], 1927.

A strong species with all the floral characters of the genus. It is allied to *E. Poilanei* Gagnep., but is unlike it in its foliage and inflorescence.

### **Trigonostemon** Blume

**Trigonostemon asahanensis** sp. nov.

Arbor. Innovationibus glabratis, pilis tantum setaceis brevibus sparsis onustis, citissime griseo-corticatis. Foliis 15–7 cm. longis, 6–3 cm. latis in sicco atris, glabris, firme chartaceis, ellipticis, apice plus minusve acutato-cuspidatis, basi cuneatis, margine grosse repandulo-serratis, venis conspicuis patentibus ca. 8–12-jugis; petiolo glabro, eglanduloso 1–1.5 cm. longo. Floribus ♂ (mancis) parvis, sepalis 5, latissime imbricativis, 3 mm. longis, 2 mm. latis, exterioribus plus minusve petaloideis in pedicellum ipsum abeuntibus, interioribus optime petaloideis, (videtur) albicantibus basi tantum incrassatis, coloratis; petalis 5, ovato-rotundatis, albidis; staminibus ca. 10, (videtur) in pulvinulum aggregatis, pistillodio nullo, columna staminali nulla. Floribus ♀ 10–13 mm. latis, singulis vel in racemulos oligofloros laterales congestis, pedicello 1.5–2 cm. longo, sepalis 5 obovatis, minutissime setulosis vel glabratis, margine integris anthesi peracta haud accrescentibus, 3 mm. longis, 2 mm. latis, petalis 5 cum sepalis alternatibus, obovatis, 5–6 mm. longis, ca. 4 mm. latis; ovario glaberrimo, atro, ad 3–4 mm. magno, grosse verrucoso-papillato, stylis 3 profunde partitis ca. 4 mm. longis, disco vix 0.5 mm. alto subintegro.

SUMATRA: Asahan, vicinity of Tomoean Dolok, alt. ca. 1000 m., *Rahmat Si Boeea* 9872 TYPE, Aug. 1939.

Two other specimens from the same Province belong here: *Rahmat Si Boeea* 9431, Tor Matoetoeng, 1792 m. alt., July 1936 (used to describe the ♂ flower); *Rahmat Si Boeea* 9567 [2 sheets], vicinity of Aek Salabat, northeast of Tomoean Dolok, ca. 450 m. alt., July 1936.

I am not sure that *Trigonostemon* is the genus for this species. It suggests *Dimorphocalyx* Thw. in every respect, but the sepals of the ♀ flower are not accrescent, which is believed to be the only character that separates *Dimorphocalyx* from *Trigonostemon*. The genera in this vicinity require critical attention, and a final disposition of this new species must await the collection of fruiting material and a general revision of the *Trigonostemon* alliance.

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